AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A compound for producing a heat-ray cutoff film, comprising:

a dispersion sol including conductive nanoparticles uniformly dispersed in a solvent formed essentially of an amphiphilic material and a surface charge mediating agent, the surface charge mediating agent providing the conductive nanoparticles with a same type of surface charge and an electrical double layer formed of counter ions surrounding the conductive nanoparticles; and

a resin binder selected from an alkyd, a polyvinylalcohol, a polybutylalcohol, an acrylic, an acrylstyrene, a super-acid vinyl, a polyvinylbutyral, a polyvinylacetal, a polycarbonate, a polychloride vinyl, a urethane, a melamine, a polyester, an epoxy, an epoxy acrylate, a polyether acrylate, a polyester acrylate, or a urethane-metamorphosed acrylate, the resin binder being in a range of about 5 to 40 wt % relative to the compound,

wherein the solvent with the conductive nanoparticles dispersed therein has amphiphilic properties, the surface charge mediating agent is selected from acetic acid, glacial acetic acid, hydrochloric acid, nitric acid, phosphoric acid, sulfuric acid, or polyacrylic acid, ~~and~~ the solvent includes ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monopropyl ether, or ethylene glycol monobutyl ether, and the conductive nanoparticles are present in an amount of at least 20 wt% relative to the dispersion sol.

2. (Previously Presented) The compound according to claim 1, wherein the conductive nanoparticles include at least one of ATO, ITO, and AZO.

3. (Currently Amended) The compound according to claim 1, wherein the conductive nanoparticles have diameters under 200 nm, and the solvent is present in a range of at least about 20 ~~to 99~~ wt % relative to the dispersion sol.

4-5. (Cancelled)

6. (Previously Presented) The compound according to claim 1, wherein the conductive nanoparticles are ATO nanoparticles containing about 5 to 20 wt % Sb, and the surface charge mediating agent is present in a range of about $5x10^{-4}$ to $3.5x10^{-3}$ g.

7. (Previously Presented) The compound according to claim 1, further comprising:

a dispersing agent having hydrocarbon entities and at least one functional group with an affinity for the conductive nanoparticles so as to facilitate an adhesion of the dispersing agent to surfaces of the conductive nanoparticles, thereby stabilizing the conductive nanoparticles.

8. (Previously Presented) The compound according to claim 7, wherein the dispersing agent is present in a range of about 1 to 30 wt % relative to the dispersion sol, the dispersing agent selected from a dispersing agent containing an amine radical, a dispersing agent containing an acid radical, or a neutral dispersing agent.

9-11. (Cancelled)

12. (Currently Amended) The compound according to claim 7, wherein the conductive nanoparticles have diameters under 200 nm, and the solvent is present in a range of at least about 20 ~~to 99~~ wt % relative to the dispersion sol.

13. (Cancelled)

14. (Previously Presented) The compound according to claim 12, wherein the conductive nanoparticles are ATO nanoparticles containing about 5 to 20 wt % Sb, and the surface charge mediating agent is present in a range of about $5x10^{-4}$ to $3.5x10^{-3}$ g.

15. (Previously Presented) The compound according to claim 12, wherein the dispersing agent is present in a range of about 1 to 30 wt % relative to the dispersion sol, the dispersing agent selected from a dispersing agent containing an amine radical, a dispersing agent containing an acid radical, or a neutral dispersing agent.

16. (Currently Amended) A method of forming a heat-ray cutoff film, comprising:

uniformly dispersing conductive nanoparticles in a solvent to form a dispersion sol, the solvent formed essentially of an amphiphilic material;

adjusting surface charges of the conductive nanoparticles with a surface charge mediating agent, the surface charge mediating agent providing the conductive nanoparticles with a same type of surface charge and an electrical double layer formed of counter ions surrounding the conductive nanoparticles;

mixing the dispersion sol with a resin binder selected from an alkyd, a

polyvinylalcohol, a polybutylalcohol, an acrylic, an acrylstyrene, a super-acid vinyl, a polyvinylbutyral, a polyvinylacetal, a polycarbonate, a polychloride vinyl, a urethane, a melamine, a polyester, an epoxy, an epoxy acrylate, a polyether acrylate, a polyester acrylate, or a urethane-metamorphosed acrylate to obtain a mixed composite, the resin binder being in a range of about 5 to 40 wt % relative to the mixed composite; and

depositing the mixed composite on a substrate and hardening the deposited composite with a chemical ray using ultraviolet radiation, an electronic ray, or heat,

wherein the solvent with the conductive nanoparticles dispersed therein has amphiphilic properties, and the surface charge mediating agent is selected from acetic acid, glacial acetic acid, hydrochloric acid, nitric acid, phosphoric acid, sulfuric acid, or polyacrylic acid, ~~and~~ the solvent includes ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monopropyl ether, or ethylene glycol monobutyl ether<u>, and the conductive nanoparticles are present in an amount of at least 20 wt% relative to the dispersion sol</u>.

17. (Currently Amended) The method according to claim 16, wherein the conductive nanoparticles have diameters under 200 nm, and the solvent is present in a range of <u>at least</u> about 20 ~~to 99~~ wt % relative to the dispersion sol.

18. (Previously Presented) The method according to claim 16, wherein the conductive nanoparticles are dispersed in the solvent by means of a dispersing agent having hydrocarbon entities and at least one functional group with an affinity for the conductive nanoparticles so as to facilitate an adhesion of the dispersing agent to surfaces of the conductive nanoparticles, thereby stabilizing the conductive

nanoparticles.

19. (Previously Presented) The method according to claim 18, wherein:

the conductive nanoparticles are ATO nanoparticles containing about 5 to 20 wt % Sb;

the surface charge mediating agent is present in a range of about $5x10^{-4}$ to $3.5x10^{-3}$ g; and

the dispersing agent is present in a range of about 1 to 30 wt % relative to the dispersion sol, the dispersing agent selected from a dispersing agent containing an amine radical, a dispersing agent containing an acid radical, or a neutral dispersing agent.

20-21. (Cancelled)

22. (Previously Presented) The method according to claim 16, wherein:

the substrate comprises one of glass, a ceramic, a plastic, a metal, and a product of these; and

the mixed composite is formed in a plastic condition at a temperature of about 50 to 500°C.

23. (Previously Presented) The method according to claim 16, wherein the substrate is a polycarbonate resin, a poly (metha) acrylylester resin, a saturated fatty acid, or a cyclo-olefin resin, the substrate hardened by ultraviolet radiation.

24. (Previously Presented) The method according to claim 23, wherein the

substrate is exposed to ultraviolet radiation in the range of about 500 to 1500 mJ/cm, while the substrate is conveyed at a velocity of about 15 to 50 m/min.

25. (Original) A heat-ray cutoff film manufactured by the method as defined in claim 18.

26. (Previously Presented) A heat-ray cutoff film manufactured by the method as defined claim 19.

27. (Previously Presented) The heat-ray cutoff film according to claim 26, wherein the film has a surface resistance of 1×10^6 Ω·cm.

28. (Previously Presented) The heat-ray cutoff film according to claim 26, wherein the film has a thickness of less than 5 μm, a pencil hardness above 1H, a visible light transmittance above 50%, and a heat-ray cutoff rate of at least 50%.

29. (Currently Amended) A method of screening heat rays, comprising:

attaching a heat-ray cutoff film on a vessel, the heat-ray cutoff film formed from a dispersion sol including conductive nanoparticles uniformly dispersed in a solvent formed essentially of an amphiphilic material, a surface charge mediating agent, and a resin binder, the surface charge mediating agent providing the conductive nanoparticles with a same <u>type of</u> surface charge and an electrical double layer formed of counter ions surrounding the conductive nanoparticles, the resin binder selected from an alkyd, a polyvinylalcohol, a polybutylalcohol, an acrylic, an acrylstyrene, a super-acid vinyl, a polyvinylbutyral, a polyvinylacetal, a polycarbonate, a polychloride

vinyl, a urethane, a melamine, a polyester, an epoxy, an epoxy acrylate, a polyether acrylate, a polyester acrylate, or a urethane-metamorphosed acrylate, the resin binder being in a range of about 5 to 40 wt % relative to the dispersion sol,

wherein the solvent with the conductive nanoparticles dispersed therein has amphiphilic properties, the surface charge mediating agent is selected from acetic acid, glacial acetic acid, hydrochloric acid, nitric acid, phosphoric acid, sulfuric acid, or polyacrylic acid, ~~and~~ the solvent includes ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monopropyl ether, or ethylene glycol monobutyl ether, and the conductive nanoparticles are present in an amount of at least 20 wt% relative to the dispersion sol.

30. (Currently Amended) A method of screening heat rays with a heat-ray cutoff film, comprising:

forming a compound including a dispersion sol with conductive nanoparticles uniformly dispersed in a solvent formed essentially of an amphiphilic material, wherein the solvent with the conductive nanoparticles dispersed therein has amphiphilic properties;

adjusting surface charges of the conductive nanoparticles with a surface charge mediating agent, the surface charge mediating agent providing the conductive nanoparticles with a same type of surface charge and an electrical double layer formed of counter ions surrounding the conductive nanoparticles;

mixing the compound with a resin binder selected from an alkyd, a polyvinylalcohol, a polybutylalcohol, an acrylic, an acrylstyrene, a super-acid vinyl, a polyvinylbutyral, a polyvinylacetal, a polycarbonate, a polychloride vinyl, a urethane, a melamine, a polyester, an epoxy, an epoxy acrylate, a polyether acrylate, a polyester

acrylate, or a urethane-metamorphosed acrylate to obtain a mixed composite, the resin binder being in a range of about 5 to 40 wt % relative to the compound;

depositing the mixed composite on a substrate and hardening the deposited composite with a chemical ray using ultraviolet radiation, an electronic ray, or heat to form the heat-ray cutoff film; and

coating the heat-ray cutoff film on a surface of a vessel,

wherein the surface charge mediating agent is selected from acetic acid, glacial acetic acid, hydrochloric acid, nitric acid, phosphoric acid, sulfuric acid, or polyacrylic acid, ~~and~~ the solvent includes ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monopropyl ether, or ethylene glycol monobutyl ether, and the conductive nanoparticles are present in an amount of at least 20 wt% relative to the dispersion sol.

31. (Currently Amended) The method according to claim 30, wherein the conductive nanoparticles have diameters under 200 nm, and the solvent is present in a range of at least about 20 ~~to 99~~ wt % relative to the dispersion sol.

32. (Previously Presented) The method according to claim 30, wherein the conductive nanoparticles are dispersed in the solvent by means of a dispersing agent having hydrocarbon entities and at least one functional group with an affinity for the conductive nanoparticles so as to facilitate an adhesion of the dispersing agent to surfaces of the conductive nanoparticles, thereby stabilizing the conductive nanoparticles.

33. (Previously Presented) The method according to claim 32, wherein:

the conductive nanoparticles are ATO nanoparticles containing about 5 to 20 wt % Sb;

the surface charge mediating agent is present in a range of about $5x10^{-4}$ to $3.5x10^{-3}$ g; and

the dispersing agent is present in a range of about 1 to 30 wt % relative to the dispersion sol, the dispersing agent selected from a dispersing agent containing an amine radical, a dispersing agent containing an acid radical, or a neutral dispersing agent.

34. (Cancelled)

35. (Previously Presented) The method according to claim 30, wherein the substrate is a polycarbonate resin, a poly (metha) acrylylester resin, a saturated fatty acid, or a cyclo-olefin resin, the substrate hardened by ultraviolet radiation.

36. (Original) The method according to claim 30, wherein the vessel is made of a metal, a ceramic, or a plastic, containing drinking waters or foods.

37-43. (Cancelled)